EXECUTIVE SUMMARY

Introduction

Section 10 of Engrossed Substitute House Bill 2496 (Salmon Recovery Act of 1998), directs the Washington State Conservation Commission, in consultation with local government and treaty tribes to invite private, federal, state, tribal, and local government personnel with appropriate expertise to convene as a Technical Advisory Group (TAG). The purpose of the TAG is to identify habitat limiting factors for salmonids. Limiting factors are defined as "conditions that limit the ability of habitat to fully sustain populations of salmon, including all species of the family Salmonidae." The bill further clarifies the definition by stating, "These factors are primarily fish passage barriers and degraded estuarine areas, riparian corridors, stream channels, and wetlands." It is important to note that the responsibilities given to the Conservation Commission in ESHB 2496 do not constitute a full limiting factors analysis.

This report is based on a combination of existing watershed studies and knowledge of the TAG participants. WRIA 26 is located in Southwest Washington within portions of Lewis, Cowlitz, Skamania, Pierce, and Yakima Counties, and it includes the Cowlitz River systems and its major tributaries; the Coweeman, Toutle, Tilton, and Cispus Rivers (see Map 4 in Appendix A). The Cowlitz River enters the Columbia River at River Mile (RM) 68. Five stocks of anadromous salmon and steelhead, and coastal cutthroat trout return to the rivers. Spring and fall chinook salmon, chum salmon, and winter steelhead are listed as "threatened" under the Endangered Species Act by National Marine Fisheries Service. Coho salmon are listed as a candidate species, and coastal cutthroat are proposed for a "threatened" listing. For purposes of this analysis the WRIA 26 was separated into seven subbasins; Coweeman, Lower Cowlitz, Toutle, Mayfield/Tilton, Riffe Lake, Cispus, and Upper Cowlitz.

WRIA 26 Habitat Limiting Factors

The major habitat limiting factors common to most streams within WRIA 26 included:

- Mayfield, Mossyrock, and Cowlitz Falls dams form complete barriers to natural upstream migration and inhibit downstream migration. Over 300 miles of formerly productive habitat is either inaccessible or inundated by the reservoirs.
- Almost throughout WRIA 26, LWD abundance is below habitat standards. Adequate large woody debris in streams, particularly larger key pieces, is critical to developing pools, collecting spawning gravels, and providing habitat diversity and cover for salmonids.
- Riparian conditions are also poor within most of the basins. Loss of riparian function affects water quality, erosion rates, streambank stability, and instream habitat conditions.
- Water quality, especially high water temperatures, was identified as a major limiting factor within certain subbasins of WRIA 26.

- Both low flows that limit the rearing habitat and connectivity, and increased peak flows that alter instream habitat were considered significant problems in many subbasins.
- Most of the historic off-channel and floodplain habitat has been disconnected from the river by diking and hardening the channels and due to the 1980 eruption of Mount St. Helens. Loss of these off-channel habitats limits rearing and over-wintering habitat for juvenile salmonids within most subbasins.

WRIA 26 Recommendations for Addressing Limiting Factors

- Continue to monitor the impacts of the operation of the dams on salmonids and the success of the reintroduction efforts above the dams. Habitat restoration efforts above the dams will provide minimal benefits to salmon recovery without the development of sustainable wild runs through a successful reintroduction effort.
- Various land uses practices have had substantial impacts on habitat conditions for anadromous salmonids. The TAG suggests that critical areas ordinances be developed and/or updated to ensure protection of habitat for threatened and endangered species.
- Assess, repair, and where possible, decommission roads that are contributing chronic sediment to stream systems or that may fail and lead to landslides.
- Look for opportunities, both short- and long-term, to increase Large Woody Debris (LWD) supplies within stream systems.
- Riparian restoration is needed almost throughout WRIA 26. Long-term goals should include speeding the recruitment of mature conifers within riparian areas.
- Reduce excessive water temperatures in WRIA 26, especially within the Coweeman, Toutle, and Tilton Subbasins.
- Look for opportunities to augment stream flows and enhance rearing habitat in WRIA 26 during low-flow periods.
- Maintain at least 60% of vegetation within each subbasin in trees >25-years-old to increase hydrologic maturity and minimize the impacts to stream channels of increased peak flows.

Coweeman Subbasin Habitat Limiting Factors

Floodplain habitat within the lower 20 miles of the Cowlitz mainstem and within the lower Coweeman has been filled with Mount St. Helens deposits and disconnected from the river. Rearing and over-wintering habitat is very limited within the subbasin. Extensive logging and high road densities have left the subbasin hydrologically immature and subject to increased peak flows. High road densities and 69 miles of stream adjacent roads have also contributed excessive fine sediments to stream channels. Riparian conditions and Large Woody Debris (LWD) levels are generally poor throughout the subbasin, especially along the diked and developed lower reaches of the Cowlitz and the Coweeman rivers. Water quality is generally good within the Cowlitz, but lack of riparian cover has contributed to elevated water temperatures and turbidity in the Coweeman watershed.

Recommendations for addressing limiting factors in the Coweeman Subbasin:

- Assess, repair, and/or abandon road systems that are contributing sediment to stream channels (Rose Valley Road alone contributes 351 metric tons/year to the Coweeman).
- Look for opportunities to increase instream LWD in appropriate stream channels, and to increase and/or enhance limited off-channel and floodplain habitat in the lower Cowlitz and Coweeman rivers.
- Reduce land use activities within the subbasin that contribute to water quality problems (especially temperature and turbidity).

Habitats that need protection in the Coweeman Subbasin:

- Protect and enhance fall chinook spawning and rearing habitat within the mainstem from the mouth of Goble Creek (RM 11.4) to Baird Creek (RM 25.9);
- Protect floodplain habitat between RM 4 and RM 7.5 on the Coweeman River;
- Protect the most productive tributaries to the Coweeman subbasin including Mulholland, Baird, and Goble creeks (in order of priority).

Lower Cowlitz Subbasin Habitat Limiting Factors

Mayfield Dam has blocked upstream passage to approximately 80% of the historic habitat in the Cowlitz basin, altered the hydrology of the system, and blocked the movement of sediments to downstream habitats. An eight-mile section of the mainstem Cowlitz now provides most of the very limited spawning and rearing habitat for fall chinook and steelhead below the dams. Fish passage problems also occur on a number of tributaries in the subbasin.

The mainstem Cowlitz and many tributaries have experienced losses in key habitat areas and habitat diversity for most salmonid life-stages due to channel simplification and diking. Grazing, agriculture, forestry, and residential and commercial development have also substantially reduced riparian function, increased bank instability, and added fine sediments to many stream systems within the subbasin.

Recommendations for addressing limiting factors in the Lower Cowlitz Subbasin include:

- Continue to assess and mitigate for negative impacts to all species of anadromous salmonids from the operation of the dams.
- Restore and enhance a number of side channels below the dams that provide critical spawning and rearing habitat for fall chinook and winter steelhead.
- Maintain and restore riparian buffers, fence cattle out of streams, and minimize activities adjacent to streams that negatively impact anadromous habitat.

Habitats that need protection in the Lower Cowlitz Subbasin:

- Side channels within the mainstem Cowlitz provide critical and very limited spawning and rearing habitat for fall chinook and steelhead.

- Monahan Creek provides important coho, steelhead, and fall chinook habitat and was characterized by the TAG as having the best tributary habitat in the subbasin.
- The upper reaches of Olequa (above Winlock) and Delameter creeks provide important spawning and rearing habitat for steelhead, cutthroat, and coho.
- Upper Lacamas Creek may support a small population of chum salmon.

Toutle River Subbasin Habitat Limiting Factors

The 1980 eruption of Mount St. Helens severely impacted salmonid populations and their habitat. Yet, most stream systems are naturally recovering from the disturbance. The North Fork Toutle is one exception were recovery has lagged behind. TAG members attributed the slow recovery to the Sediment Retention Structure (SRS) that has altered natural recovery processes.

A number of habitat constraints still limit production within the subbasin including; limited floodplain, off-channel, and pool habitat, high width-to-depth ratios and poor riparian conditions that contribute to elevated stream temperatures, lack of instream cover and LWD, and unstable substrate conditions. Hydrologic immaturity and high road densities within the subbasin contribute to increased peak flows and additional channel instability. High road densities and numerous stream adjacent roads also contribute excessive amounts of fine sediment to stream channels. Access and water quality are two major limiting factors within the Silver Lake watershed.

Recommendations for addressing limiting factors in the Toutle River Subbasin:

- Removal or alteration of the SRS would facilitate natural recovery of the North Fork Toutle and downstream systems.
- Water quantity and water quality problems within the Silver Lake watershed need to be addressed.
- Reduce road densities and the miles of stream adjacent roads within the subbasin, and assess the condition of abandoned roads in the upper Toutle subbasin.
- Replant degraded riparian areas with native conifers.
- Look for opportunities to enhance or restore off-channel rearing habitat.

Habitats that need protection in the Toutle River Subbasin:

- TAG members felt that the South Fork and low-gradient reaches of its tributaries contained the most important habitat within the Toutle subbasin.
- Elk and Devils creeks are the most productive steelhead tributaries to the Green River, and Hoffstadt and Alder Creeks are the most productive in the North Fork Toutle watershed.
- Upper Wyant Creek provides important low-gradient coho habitat.

Mayfield/Tilton Subbasin Habitat Limiting Factors

Mayfield Dam forms a complete barrier to natural upstream migration and it inhibits downstream migration. Miles of formerly productive habitat were inundated by the reservoir and conditions now favor predators of juvenile salmonids.

Extensive timber harvest, high road densities, and numerous stream adjacent roads in the Tilton River watershed combine to decrease riparian function and water quality and to increase peak flows, inputs of fine sediments, and channel instability. TAG members felt that over-winter survival in the Tilton River watershed is below expectations due to elevated peak flows and a lack of pools and off-channel habitat for refuge. Juvenile rearing success is also reduced because of predation within the reservoir. With the high flows and lack of LWD, spawning gravels are also scoured from many areas of the Tilton watershed.

Recommendations for addressing limiting factors in the Mayfield/Tilton River Subbasin:

- Continue to monitor and increase the efficiency of reintroduction efforts above the dams. Downstream migration success is critical to these efforts
- Increase rearing success in this subbasin by upgrading road locations, crossings, and other floodplain constrictions, reduce road densities, maintain hydrologic maturity, and wherever possible restore and enhance floodplain connections and rearing habitat.
- Supplement LWD in appropriate stream channels to provide instream structure and cover, and enhance pool quality and spawning habitat.
- Establish functioning riparian corridors within the subbasin to increase water quality and recruitment potential for LWD.

Habitats that need protection in the Mayfield/Tilton River Subbasin:

- Side-channel habitat below the town of Morton provides some critical areas with refuge from high flows.
- Winston Creek supports a “healthy” run of resident cutthroat trout that need protection.
- The South Fork Tilton, the mainstem Tilton from Nineteen Creek (RM 22.9) to the falls (RM 25), and the West Fork Tilton provide some of the best habitat within the subbasin.
- Coon, Snow, and Trout creeks provide ideal summer-rearing areas for steelhead and resident trout.

Riffe Lake Subbasin Habitat Limiting Factors

Mossyrock Dam forms a complete barrier to both upstream and downstream passage. Downstream migrants (coho and chinook) are unable to navigate the 23-mile long lake. Until problems with downstream migration are addressed, reintroduction of anadromous salmonids is not planned or feasible within the subbasin.

Cispus River Subbasin Habitat Limiting Factors

Currently, the system of dams blocks all natural upstream passage and downstream migration. Downstream migrants are captured at the Cowlitz Falls Dam and transported below the dams. The reservoir, Lake Scanewa, has inundated the lower reaches of the Cispus River and Copper Canyon Creek, increasing predation and reducing key habitat for spawning, incubation, and fry colonization.

Past management practices on private and public lands, especially road construction and timber harvests have contributed to increased peak flows, excessive sediment delivery to streams, and bank instability, and reduced riparian function and instream LWD. A number of stream adjacent roads have also effectively channelized the river and isolated already limited off-channel rearing habitat. However, some areas within the subbasin have properly functioning habitat and new management practices should eventually address many of the remaining problems.

Recommendations for addressing limiting factors in the Cispus River Subbasin:

- Reintroduction efforts in the entire subbasin are dependent upon successful operation of the Cowlitz Falls Fish Collection Facility. It is critical to the recovery of anadromous fish that capture efficiency at the dam be monitored and improved over time.
- The USFS should continue to address road related problems that reduce floodplain connectivity and limit rearing habitat within the subbasin.
- Enhance existing instream habitat by supplementing LWD. Utilize LWD that collects at Mossyrock Dam for projects within the Cispus subbasin.
- Manage early- and mid-structural stands within riparian reserves to develop late-structural characteristics in the Cispus subbasin.
- Flow (cfs) thresholds for drawdowns should be reevaluated, and if possible increased, to assure that juveniles are not flushed over the dam into Riffe Lake.

Habitats that need protection in the Cispus River Subbasin:

- The North Fork Cispus provides some of the best functional habitat in the subbasin and protection of this system is the highest priority in the subbasin.
- Off-channel habitat within the mainstem Cispus between Iron Creek (RM 8.2) and the North Fork Cispus (RM 19.9) provides important rearing habitat for juveniles.
- Enhance the fair-quality habitats in the North Fork Cispus, Yellowjacket Creek, and Greenhorn Creek, (in order of priority).
- Maintain the high-quality habitats in Woods, Orr, and Iron creeks.

Upper Cowlitz Subbasin Habitat Limiting Factors

Currently, the system of dams blocks all natural upstream passage and downstream migration. Downstream migrants must be captured at the Cowlitz Falls Dam and transported below the dams. Trap efficiency varies with flow, and smolts are often flushed into Riffe Lake during drawdowns. Lake Scanewa inundated the once productive

reaches of the upper Cowlitz increasing predation and reducing key habitat for spawning, incubation, and fry colonization.

Natural barriers to anadromous fish passage occur on many tributaries within a mile or two of the confluence with the upper Cowlitz River. The low-gradient habitat within these tributary channels provides a large proportion of the habitat within the subbasin. Channel alterations, combined with increased sediment inputs, have created low-flow passage problems and reduced habitat quality within these important reaches. LWD is generally lacking, resulting in limited pool habitat, cover, and habitat diversity in the mainstem and lower reaches of most tributaries. LWD recruitment potential is also low.

Recommendations for addressing limiting factors in the Upper Cowlitz Subbasin:

- Collection efficiency monitoring at the dam should continue, along with efforts to improve the efficiency of the collection equipment and process.
- Increase instream cover and habitat diversity in the upper reaches of Lake Skanewa to reduce the chance of flushing juveniles during drawdowns.
- Look for opportunities to enhance and restore rearing and spawning habitat within the low-gradient reaches of tributary habitat.
- Protect and restore riparian habitat along the mainstem Cowlitz and its tributaries, and supplement LWD in appropriate response reaches.

Habitats that need protection in the Upper Cowlitz Subbasin:

- The lower reaches of the Ohanapecosh and Clear Fork have pristine spawning and rearing habitat that provides especially critical spring chinook spawning habitat.
- Low-gradient tributary habitat provides critical spawning and rearing habitat for all species within the upper subbasin.
- Skate Creek has the best available habitat in the upper subbasin.

Data Gaps

The ability to determine what factors are limiting salmonid production, and to prioritize those factors within and between drainages, is limited by the current lack of specific habitat assessment data. Collecting this baseline data will be critical for developing effective recovery and restoration plans, for prioritizing future recovery efforts, and for monitoring the success of those efforts. The significant data gaps in WRIA 26 include:

- Watershed level processes such as hydrology, sediment transport and storage, nutrient cycling, and vegetation structure and composition;
- Recent and comprehensive data on the distribution and condition of stocks;
- Physical surveys of habitat conditions and fish usage within most stream systems;
- Comprehensive water quality data from all major subbasins;
- Data on the success of all phases of the reintroduction efforts in the Tilton River, Cispus, and upper Cowlitz subbasins.

The following chapters provide a detailed assessment of the habitat limiting factors within WRIA 26.